REMARKS

Claims 1-25 remain pending in the present application. Clarifying amendments have been made to claims 1, 16, 20 and 23. Accordingly, reconsideration and allowance for all of the claims in the present application are earnestly solicited in view of the following amendments and remarks.

Claims 1-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,883,017 to Tepman et al. in view of U.S. Patent No. 6,528,804 to Sullivan et al. This rejection is respectfully traversed.

Claims 1, 16, 20 and 23 of the present application recite apparatus and methods for directing a charged particle beam in an ion implanter. Specifically, the apparatus and method are directed to reducing the probability of beam altering collisions between the ion beam and a gas within a target chamber of the ion implanter during ion beam processing of the target such as a semiconductor wafer. A chamber divider divides the target chamber into upstream and downstream regions with the target being located in the downstream region. An aperture is formed in the divider to be positioned along the path of the ion beam. The aperture is sized so that the ion beam may pass therethrough without substantially blocking the beam. By sizing the divider and aperture as such, gas flow from the target to the upstream side of the divider is limited without increasing the implant time for a given dose, to maximize the benefit of the divider. As a result, the probability of beam altering collisions is reduced and the ability to control the dose and depth of the ion implant is enhanced.

Tepman is relied upon to disclose a compartmentalized process chamber for semiconductor wafers. A first compartment 12 is provided for supplying an isolated environment for processing the wafers and a second compartment 14 is provided in selective communication with the first compartment for loading and unloading the wafers as illustrated in Fig. 1. An aperture 16 allows the first and second compartments to selectively communicate and a moveable wall 18 is selectively positionable within the second compartment to selectively seal the aperture between the first and second compartments. However, the moveable wall 18 of Tepman fails to divide a target chamber into upstream and downstream regions during charged particle beam processing of a target as recited in claims 1, 16, 20 and 23 of the present application. Furthermore, the aperture 16 of Tepman defines the opening between the first and

second compartments in which the moveable wall 18 is positioned. As a result, Tepman fails to suggest or imply a divider with an aperture sized to permit passage of a charged particle beam to a target without substantial blockage of the beam so that backflow of gas into an upstream region of the chamber is limited.

It is acknowledged in this rejection that Tepman fails to disclose a charged particle beam apparatus for ion implantation coupled to a mass analyzer, an accelerator and a scanner or an ion current measuring system. Therefore, Sullivan is relied upon to disclose a charged particle beam apparatus including an ion source 12, a mass analyzer 30, an accelerator 40 and a scanner 42 as illustrated in Fig. 1. However, Sullivan fails to suggest or imply a divider with an aperture sized to permit passage of a charged particle beam to a target without substantial blockage of the beam as claimed in the present application. As a result, Sullivan does not cure the deficiencies of Tepman. Accordingly, it is respectfully submitted that claims 1-25 patentably define over the combination of Tepman and Sullivan and it is respectfully requested that this rejection be reconsidered and withdrawn.

In view of these amendments and for all of the above stated reasons, it is respectfully submitted that the outstanding rejection has been overcome. Therefore, it is requested that claims 1-25 of the present application be passed to issue.

If any issues remain unresolved, the Examiner is requested to telephone the undersigned attorney.

Please charge any additional fees or credit any overpayments to deposit account No. 50-0896.

Respectfully submitted,
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